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EXAMINER

FIGUEROA, MARISOL

ART UNIT

PAPER NUMBER

2681

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Best Available Copy

Office Action Summary

Application No.

10/727,113

Applicant(s)

ZHENGDI, QIN

Examiner

Marisol Figueroa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-17 is/are rejected.
- 7) ☒ Claim(s) 6 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Information Disclosure Statement filed on December 2, 2003 has been considered.

Claim Objections

2. Claims 11, 12, and 13 are objected to because of the following informalities:

(a) On line 5 of claim 11, on line 6 of claim 13, and on line 9 of claim 15, insert --the method of-- before claim 1, in order to be consistent with claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 12 and 14** are rejected under 35 U.S.C. 102(b) as being anticipated by **Kuwahara European Patent Application EP 1 164 383 A2**.

Regarding claim 12, Kuwahara discloses a mobile station (MS) comprising means for receiving signals from a plurality of network elements (BS₀, BS₁, BS₂) of a network for determining the location of said mobile station (MS) (col.6, lines 55 - col.7, lines 1-4; col.6, lines 26-33; signal receiver 20) and an indication of a search window for each of said network elements (BS₀, BS₁, BS₂) (col.6, lines 55 – col.7, lines 1-12; window setter 22) and means for determining a delay of received

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signals using a respective search window (col.6, lines 55 – col.7, lines 1-4; col.7, lines 13-16; delay profile calculator 21).

Regarding claim 14, Kuwahara discloses a network element (BS₀) for a network comprising means for transmitting signals for determining the location of a mobile station (MS) to said mobile station (MS) and means for retrieving and transmitting location information about at least one further network element (BS₁, BS₂) to said mobile station (MS) (col.3, lines 54 – col.4, lines 1-25; a server stores at least one information item, i.e. location of base station, and transmits the at least one information item over a wireless connection to a wireless terminal and the terminal determines a window size for estimating a delay profile of received signals and calculate its location).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 2, 7, 8, 9, 11, 13, 15, 16, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kuwahara European Patent Application EP 1 164 383 A2** in view of **Soliman U.S. Publication No. 2003/0114172 A1**.

Regarding claim 1, Kuwahara discloses a method for estimating a delay of a signal (col.2, lines 56 – col.3, lines 1-4) received at a mobile station (MS) from a specific network element (BS.sub.1, BS.sub.2) of a network for determining the location of said mobile station (MS), said

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method comprising: estimating said delay within a search window (col.3, lines 4-8), which search window is determined based on location information available for said specific network element (BS_1 , BS_2) (abstract, lines 1-9; col.3, lines 8-11, 16-24; col.6, lines 40-54; the window is setter changes the range according to at least one information item within the remote received signals {i.e. position of the base station}). Kuwahara fails to disclose wherein the search window is also determined based on a known distance of said mobile station (MS) to at least one other network element (BS_0 , BS_1). Soliman teaches a method that uses the location of a mobile and also on the location of the mobile and another component within a network for determining a search window for searching pilot signals (abstract, lines 1-6; p.0054, lines 1-4). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to determine a search window in a known location of a mobile station within a network, e.g. distance from a BS, as suggested by Soliman, in order to minimize the wasted searcher resources because a more efficient search may be conducted (p.0038, lines 1-5).

Regarding claim 2, the combination of Kuwahara and Soliman discloses a method according to claim 1, Kuwahara discloses wherein said at least one other network element comprises a serving network element (BS_0) serving a server cell (20) in which said mobile station (MS) is currently located (col.3, lines 54- col.4, line 1). Kuwahara fails to disclose wherein the maximum distance of a boarder of said server cell (20) to said serving network element (BS_0) defines the known distance of said mobile station (MS) to said serving network element (BS_0). Soliman teaches that window sizes are mostly determined by the size of the coverage area of a given cell, the window are sized to correspond to a mobile located at the greatest distance, e.g. boarder of the serving cell, from the base station but within the cell (p.0029, lines 7-16). Therefore, it would have been obvious

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to one having ordinary skill in the art at time of the invention to define the known distance as the maximum distance of a boarder of said server cell to said server network as suggested by Soliman, in order to size a search window to correspond to the worst case scenarios, regardless of the location of the mobile in the serving cell (p.0029, lines 12-16).

Regarding claim 7, the combination of Kuwahara and Soliman discloses a method according to claim 1, wherein a respective search window is determined for at least two specific network elements (BS_1 , BS_2) in the order of their distance to said mobile station (MS), beginning with the network element (BS_1) which is the closest to said mobile station (MS) (col.6, lines 22-39; col.8, lines 40-53; the window is set to detect at least three delay profiles, i.e. three base stations, for determining the position of the mobile terminals; the window setter with information stored in the memory may select a primary base station having the highest received power, e.g. closest to mobile station, and the bases stations surrounding the primary base station).

Regarding claim 8, the combination of Kuwahara and Soliman discloses a method according to claim 1, wherein a search window is determined for at least two specific network elements in the order of the signal strength at said mobile station of signals transmitted by said network elements, beginning with the network element providing the strongest signal (col.8, lines 40-47).

Regarding claim 9, the combination of Kuwahara and Soliman discloses a method according to claim 1, Soliman further teaches wherein the covering range of said specific network element (BS_1 , BS_2) is take into account in addition for limiting said search window (p.0029, lines 7-16). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to take into account the covering range of said specific network element as suggested by

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Soliman, in order to size a window corresponding to a mobile located at the greatest distance from the base station but within the cell.

Regarding claim 11, Kuwahara discloses a mobile station (MS) (col.6, lines 55-col.7, lines 1-4) comprising means for receiving signals (Fig. 7, signal receiver 20) from a plurality of network elements (BS_0 , BS_1 , BS_2) of a network for determining the location of said mobile station (MS), means for determining a search window (Fig. 7, window setter 22) and means for determining a delay of received signals using a respectively determined search window (Fig.7, delay profile calculator). Conforming with the combination of Kuwahara and Soliman the mobile station determines a search window according to claim 1, see remarks about claim 1 above.

Regarding claim 13, Kuwahara discloses a network element (BS_0) for a network comprising means for transmitting signals for determining the location of a mobile station (MS) to said mobile station (MS) (col.3, lines 54 - col.4, line 1; the system include a center or server which stores information item and sends it to the mobile terminal), means for determining a search window for at least one further network element (BS_1 , BS_2) (col.10, lines 17-21; the server may designate a window size for delay profile calculation therefore it is inherent to have the means for determining a search window) and means for transmitting information on said determined search window to said mobile station (MS) (col.6, lines 40-54; the information item is transmitted through the base stations and may include the size of at least one window needed for calculating delay profiles of that base station and other base stations). Conforming with the combination of Kuwahara and Soliman the system determines a search window according to claim 1.

Regarding claim 15, Kuwahara discloses a communication system comprising: at least two network elements (BS_0 , BS_1) for transmitting signals for determining the location of a mobile station

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(MS) (col.6, lines 22-28); at least one mobile station (MS) with means for determining a delay of received signals based on a search window (col.6, lines 28-39); and means for determining a search window (col.6, lines 55 – col.7, lines 1-12). Conforming with the combination of Kuwahara and Soliman the mobile station determines a search window according to claim 1, see remarks about claim 1 above.

Regarding claim 16, the combination of Kuwahara and Soliman discloses a communication system according to claim 15, wherein said means for determining a search window are comprised in at least one of said at least two network elements (BS_0 , BS_1) (col.10, lines 17-21; the window size can be designated by the base station, therefore it is inherent that the base station has means to determine a search window).

Regarding claim 17, Kuwahara discloses a communication system according to claim 15, wherein said means for determining a search window are comprised in said at least one mobile station (MS) (col.6, lines 55 - col.7, lines 1-12; window setter 22).

7. **Claim 3 and 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kuwahara** in view of **Soliman**, and further in view of **Uhlik U.S. Patent No. 6,760,599 B1**.

Regarding claim 3, the combination of Kuwahara and Soliman discloses a method according to claim 1, Kuwahara disclose wherein said at least one other network element comprises a serving network element (BS_0) serving a server cell in which said mobile station (MS) is currently located (col.3, lines 54- col.4, line 1). However Kuwahara and Soliman fails to disclose wherein said known distance is a distance (D_0) of said mobile station (MS) to said serving network element (BS_0) which was determined based on delay measurements on signals from said serving network element (BS_0). Uhlik discloses a method and apparatus for selecting a Base Station and teaches that a received signal delay at a user terminal, e.g. mobile station, is a measurement of the relative distance

from each Base Station to the user equipment, and this distance is used to make a Base Station selection (col.13, lines 34-48). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to determine a known distance from a mobile station to a serving network element, i.e. base station, based on delay measurements as suggested by Uhlik, because it is well known that a signal delay is a measurement of the relative distance from a base station to a mobile station and a criterion used for selecting a base station.

Regarding claim 4, the combination of Kuwahara and Soliman discloses a method according to claim 1, wherein said at least one other network element comprises at least two network elements (BS_0 , BS_1) (col.6, lines 25-28; the system includes a terminal and at least three base stations). However Kuwahara and Soliman fails to teach wherein the respective distance from the mobile station to the other network elements was already determined based on delay measurements on signals from said at least two network elements (BS_0 , BS_1). However Kuwahara and Soliman fails to disclose wherein said known distance is a distance (D_0) of said mobile station (MS) to said serving network element (BS_0) which was determined based on delay measurements on signals from said serving network element (BS_0). Uhlik discloses a method and apparatus for selecting a Base Station and teaches that a received signal delay at a user terminal, e.g. mobile station, is a measurement of the relative distance from each Base Station to the user equipment, and this distance is used to make a Base Station selection (col.13, lines 34-48). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to determine a known distance from a mobile station to a serving network element, i.e. base station, based on delay measurements as suggested by Uhlik, because it is well known that a signal delay is a measurement of the relative distance from a base station to a mobile station and a criterion used for selecting a base station.

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8. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kuwahara** in view of **Soliman**, and further in view of **Bayley U.S. Patent No. 6,775,252 B1**.

Regarding claim 10, the combination of Kuwahara and Soliman discloses a method according to claim 1, but fails to disclose further comprising the step of determining a threshold value based on the size of a determined search window, which threshold value defines the minimum signal strength of signals received at said mobile station for which a delay is estimated. Bayley teaches a search window size that is adjusted in response to a measured signal strength of a first base station signal and used by the remote unit to search other base stations (abstract, lines 8-12; col.15, lines 37 – col.16, lines 1-28), the strength of a signal indicates that a remote unit is geographically nearer or farther from the base station (col.7, lines 17-23). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the signal strength received from a base station as a minimum threshold value to determine a search window as suggested by Bayley, in order to determine a window size to search for the closest base stations to the mobile terminal for calculating the position of the terminal.

Allowable Subject Matter

9. Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. Any response to this Office Action should be **faxed to (703) 872-9306 or mailed to:**

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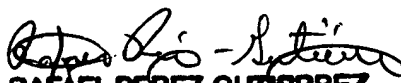
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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marisol Figueroa whose telephone number is (571) 272-7840. The examiner can normally be reached on Monday Thru Friday 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Marisol Figueroa


RAFAEL PEREZ-GUTIERREZ
PATENT EXAMINER
2/22/05